

WHAT IS CLAIMED IS:

5 1. A plasma processing method using a process gas supplied into a process chamber to generate plasma from the process gas and process a substrate placed in said process chamber by means of the plasma, wherein said substrate includes stacked films of at least two types to be etched by the plasma, and, according to any of said films that is to be etched, a change is made in said process gas in a plasma generation period.

2. The plasma processing method according to claim 1, wherein in the plasma generation period, a change is made in a bias voltage applied to said substrate together with the change made in said process gas.

3. The plasma processing method according to claim 1, wherein in the plasma generation period, a change is made in a plasma generating condition for stably maintaining generation of the plasma, together with the change made in said process gas.

4. The plasma processing method according to claim 3, wherein the change in said plasma generating condition for stably maintaining generation of the plasma is made simultaneously with or prior to the change made in said process gas.

5. The plasma processing method according to claim 3, wherein said plasma generating condition for stably maintaining generation of the plasma is pressure of the process gas within said process chamber.

6. The plasma processing method according to claim 3, wherein said plasma generating condition for stably maintaining generation of the plasma is output of a plasma exciting power source.